



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/519,016

12/21/2004

Richard Schmidt

52201-0631

3200

28481

7590

04/06/2010

TIAJOLOFF & KELLY  
CHRYSLER BUILDING, 37TH FLOOR  
405 LEXINGTON AVENUE  
NEW YORK, NY 10174

EXAMINER

DEGHAN, QUEENIE S

ART UNIT

PAPER NUMBER

1791

MAIL DATE

DELIVERY MODE

04/06/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/519,016	<b>Applicant(s)</b> SCHMIDT ET AL.	
	<b>Examiner</b> QUEENIE DEGHAN	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3-8 and 22-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-8, 22-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 8, 22-27, and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rau et al. (4,162,908) in view of Ruppert et al. (5,788,730) and Meyer (4,990,740) or Kamp et al. (4,992,642). Regarding claims 23-27 and 35-36, Rau et al. disclose a method for glass preform using a plasma burner, the method comprising supplying a hydrogen-free media flow comprising  $\text{SiCl}_4$  and oxygen to a multi-nozzle deposition burner and focusing the media flow into a plasma zone via a media nozzle, wherein the  $\text{SiCl}_4$  is oxidized to form  $\text{SiO}_2$  particles and depositing the

Art Unit: 1791

SiO<sub>2</sub> particles on a surface while being vitrified (col. 1 line 64 to col. 2 line 22, line 59, col. 4 lines 24-27, figures 1 and 2). Rau et al. disclose a multi-nozzle burner, but fail to disclose a media nozzle of that tapers in the direction of the plasma zone. Ruppert teaches a multi-nozzle burner for deposition of glass starting materials on a surface, wherein one of the nozzles has a wall defining a passage that tapers in a tapered portion towards the direction of the plasma zone and communicating with a nozzle opening. Although the burner nozzle is employed for a flame hydrolysis process, Ruppert teaches the tapered nozzle has the effect of focusing a gas stream toward the area of the reaction zone, stabilizing the gas stream, and preventing reaction in the nozzle opening (col. 3 lines 50-67, figure). Although the tapered nozzle is applied to a barrier gas stream, it would have been obvious to one of ordinary skill in the art at the time of the invention to have similarly adapted a tapered passage to the media nozzle of Rau, such that the media flow passes through the passage and through the nozzle opening, since it allows for the stabilization and focus of the media flow towards the plasma reaction zone and more efficient deposition of the SiO<sub>2</sub> particles.

4. Ruppert does not specify the length of the tapered portion of the nozzle or the nozzle opening size. However, tapered nozzles and nozzle openings of various sizes are well known in the art, such as the tapered nozzle of Meyer or the tapered nozzle of Kamp. Meyer teaches a multi-nozzle burner wherein a media is directed towards a plasma zone through a passage and nozzle opening, the passage being tapered in the direction of the plasma zone and having a tapered portion length of at least 8mm (col. 7 lines 44-47, 50-51, figure 1). Kamp teaches a multi-nozzle burner wherein the nozzle

Art Unit: 1791

has a nozzle opening of 5mm in diameter (figure 2, col. 4 lines 14-15). The length of the tapered portion is not specifically disclosed. However, as shown proportionally in figure 2, with a nozzle opening of 5mm, the tapered portion is at least 5mm. Although the nozzles of Meyer and Kamp are utilized for a different purpose, selecting the length of a tapered nozzle, for instance greater than 8mm and a nozzle opening (i.e. 5mm) would be choices that are well known in the art. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to have reasonably expected the nozzle of Rau and Ruppert to have a tapered portion with a desired length of at least 8mm and an opening of about 5mm, for instance, as such length and size are known in the art while still providing the desired flow characteristics to the media delivered through the nozzle.

5. Regarding claims 8 and 33, Rau discloses a glass starting material that contains a fluorine-containing component (col. 2 lines 56-29).

6. Regarding claims 22 and 34, Rau teaches the multi-nozzle burner includes a plurality of additional nozzles (items 11 and 12) with cylindrical walls concentric with and surround the media nozzle and defining annular gaps between each other and the media nozzle (fig. 1 & 2, column 3 lines 56-59).

7. Claims 3-6 and 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rau et al. in view of Ruppert et al. (5,788,730), and Meyer (4,990,740) or Kamp et al. (4,992,642), as applied to claim 1, in further view of Edahiro et al. (4,402,720).

Regarding claims 3-4 and 28-29, Rau teaches media flow that is enveloped with oxygen working gas since it already well mixed in with the media flow (col. 3 lines 15-25, 53-64).

Art Unit: 1791

Rau also teaches flowing oxygen from a first gas nozzle of the deposition burner (col. 3 lines 15-25). Although the oxygen from the first gas nozzle does envelope the media flow, Rau also mentions the working gas has been supplied through the media nozzle. Edahiro teaches a plasma burner comprising of multiple nozzles, wherein a glass starting material flows from a media nozzle and an oxygen-containing working gas flows from a first working gas nozzle such that the oxygen envelops the media flow. Also supplying the working gas separate to allow for the formation of Si-N bonds first before Si-O bonds in the case of depositing nitrogen doped silica particles (col. 6 lines 31-65, fig 3a). Although not specifically disclosed, it would be reasonable to expect that the first working gas nozzle of Edahiro functions as a diffuser since it disperse the oxygen containing working gas such that the glass starting material and working gas are combined to form the glass particles (col. 9 lines 40-44). Additionally, Ruppert teaches the first tube surrounding a tapered nozzle results in an expansion area, also known as the diffuser area, which allows for a flow of gas in turbulent manner (col. 6, lines 13-25). It would have been obvious to one of ordinary skill in the art at the time of the invention to have adapted a first working gas nozzle for distributing a oxygen-containing working gas that envelops the glass starting material from the media nozzle in the process of Rau because supplying oxygen working gas from a separate nozzle allows for the desired incorporation of dopants such as nitrogen in the silica glass, as taught by Edahiro. Also, it would have been obvious to one of ordinary skill in the art at the time of the invention to have also flowed the working gas in a turbulent manner from a nozzle

Art Unit: 1791

that functions as a diffuser in order to ensure the oxidation reaction of the glass starting material, by the ample diffusion of the working gas into the glass starting material.

8. Regarding claims 5 and 30, Rau teaches the working gas flow is enveloped by at least one oxygen-containing separating gas flow exiting from an annular gap nozzle coaxially surrounding the working gas nozzle when exiting from the working gas nozzle (col. 3 lines 15-25, 60-64, col. 4 lines 11-15, figures 1 and 2).

9. Regarding claims 6 and 31, Rau discloses producing a plasma zone by a high-frequency excitation inside a burner tube (12) into which a mixture of media flow and working gas flow is introduced (col. 3 lines 15-25, 60-62).

10. Claims 7 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rau et al. (4,162,908) in view of Ruppert et al. (5,788,730) and Meyer (4,990,740) or Kamp et al. (4,992,642), as applied to claim 1 above, in view of Gouskov et al. (6,535,240). Rau et al. disclose supplying a glass starting material such as  $\text{SiCl}_4$ , but uses oxygen as a carrier gas. Gouskov et al. teaches a plasma vapor deposition process using a glass starting material, such as  $\text{SiCl}_4$  also, and a carrier gas, wherein the carrier gas can alternatively be oxygen or nitrogen (col. 6 lines 25-46). It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized nitrogen gas as a carrier gas for the glass starting material as an alternative carrier gas in the process of Rau because Gouskov has demonstrated that it is known in the art and it predictable achieves the result of successfully serving to deliver the glass starting material as oxygen does.

***Response to Arguments***

1. The drawing requirement has been withdrawn.
2. The previous office action indicated the allowable subject matter of claims 24-27. In view of a further search, it appears this is incorrect. The Examiner apologized for this error. A new non-final office action has been presented.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to QUEENIE DEHGHAN whose telephone number is (571)272-8209. The examiner can normally be reached on Monday through Friday 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 1791

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Queenie Dehghan/

Examiner, Art Unit 1791